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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,999	08/23/2005	Johan Loccufier	234918	2402
23460 7590 07/26/2007 LEYDIG VOIT & MAYER, LTD TWO PRUDENTIAL PLAZA, SUITE 4900 180 NORTH STETSON AVENUE CHICAGO, IL 60601-6731			EXAMINER ZIMMERMAN, JOSHUA D	
			ART UNIT 2854	PAPER NUMBER
			MAIL DATE 07/26/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/530,999

Applicant(s)

LOCCUFIER ET AL.

Examiner

Joshua D. Zimmerman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17, 19 and 21-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17, 19 and 21-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 5/02/07 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6, 9-12, 14-15, 19, 21-28, and 31-37 are rejected under 35 U.S.C. 103(a) as being anticipated by Kunita et al. (US 2001/0009129) in view of Kinsho et al. (US 5,837,785) and Ding et al. (US 5,994,430).

Regarding claim 1, Kunita et al. disclose "a polymer comprising ... a group having the structure --S-(L)<sub>k</sub>-Q wherein S is covalently bound, wherein L is a linking group, k is 0 or 1 and q comprises a heterocyclic group (paragraphs 193 and 197)."

Kunita et al. fail to disclose that the polymer comprises a "phenolic monomeric unit wherein the phenyl group of the phenolic monomeric unit is substituted by" the specified group and that "wherein S is covalently bound to a carbon atom of the phenyl group." However, Kunita et al. teach that the heterocyclic group is attached either to the main chain or the side chain of the main polymer by an appropriate linking chain, including S and thioethers (paragraph 197), further teaching that the main polymer chain should be selected based upon availability and economical efficiency, specifically suggesting polyvinyl polymers (last sentence of paragraph 197), and one having ordinary skill in the art would recognize that poly(vinylphenols) are widely available, economical polyvinyl polymers. One having ordinary skill in the art would also recognize that when substituting polyvinylphenols, there are only three options for the location of the substitution: on a carbon of the vinyl portion, on a carbon of the phenyl portion, or on the hydroxyl group.

Kinsho et al. teach the desire and ability to incorporate heterocyclic molecules into Novolac chains (a polyvinylphenol) in order to improve the storage stability of the polymer (abstract).

Ding et al. teach the heterocyclic substitution of polyvinylphenols via the carbon atoms of the phenyl portion (see the compound drawn in column 4 Ding et al., and component Y).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use polyvinylphenol polymers as the base of the heterocyclic polymer of Kunita et al. in order to improve the storage stability. It further would have

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been obvious, at the very least through routine experimentation, to substitute at a carbon of the phenyl group. Furthermore, one having ordinary skill in the art could at once envisage a scenario wherein the substitution is made on a carbon of the phenyl group, since there are only three options for substitution, if one only considers the different types of bonding positions available. And if one were to consider the actual *number* of places available for bonding (on a basic polyvinylphenol), there are only six sites available for substitution: four carbon atoms on the phenyl group, one carbon on the vinyl group, and on the oxygen atom in the hydroxyl group. Therefore, four out of six, or 67%, of the sites available for substitution would be a carbon atom of the phenyl group.

Lastly, even if the aforementioned motivations were not sufficient, which they are not, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute at the carbon atom of the phenyl group instead of the oxygen atom of the hydroxyl group in order to maintain the amount of hydroxyl groups available. One having ordinary skill in the art would recognize that the number of hydroxyl groups in a polymer is a results-effective variable, which affects the solubility in a developer solution. Even though applicants in the reply filed on 5/02/07 submitted this information, this knowledge was available to those having skill in the art *at the time of the invention*, and therefore use of this knowledge as motivation is not improper hindsight.

Regarding claim 2, Kunita et al. further disclose "wherein said heterocyclic group is aromatic (paragraph 195)."

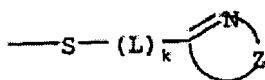
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Regarding claim 3, Kunita et al. further disclose "wherein said heterocyclic group contains at least one nitrogen atom in the ring of the heterocyclic group (paragraph 196)."

Regarding claim 4, Kunita et al. further disclose "wherein said heterocyclic group has a 5- or 6- membered ring structure, and is optionally annelated with another ring system (paragraphs 195 and 196)."

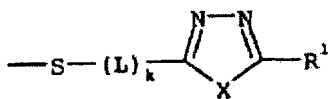
Regarding claim 5, Kunita et al. further disclose "wherein the heterocyclic group is selected from an optionally substituted tetrazole, triazole, thiadiazole, oxadiazole, imidazole, benzimidazole, thiazole, benzthiazole, oxazole, benzoxazole, pyrazole, pyrrole, pyrimidine, pyrasine, pyridasine, triazine or pyridine group (paragraph 196)."

Regarding claim 6, Kunita et al. further disclose "wherein --S-(L)<sub>k</sub>-Q comprises the following formula



wherein Z represents the necessary atoms to form a 5- or 6- membered heterocyclic aromatic group, and is optionally annelated with another ring system (paragraph 196, specifically those compounds on line 4)."

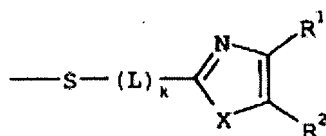
Regarding claim 9, Kunita et al. further disclose "wherein --S-(L)<sub>k</sub>-Q comprises the following formula



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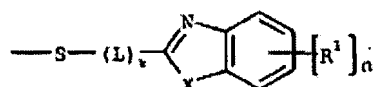
wherein X is O, S or NR<sup>3</sup>, wherein R is selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen or -L<sup>1</sup>--R<sup>2</sup>, where in L<sup>1</sup> is a linking group, wherein R<sup>2</sup> is selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen or --CN, wherein R<sup>3</sup> is selected from hydrogen or an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, or wherein at least two groups selected from R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> represent the necessary atoms to form a cyclic structure (paragraph 196, specifically triazine)."

Regarding claim 10, Kunita et al. further disclose "wherein --S-(L)<sub>k</sub>-Q comprises the following formula



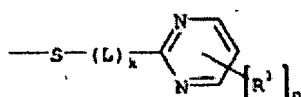
wherein X is O, S or NR<sup>4</sup>, wherein R<sup>1</sup> and R<sup>2</sup> are independently selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen or -L<sup>2</sup>--R<sup>3</sup> wherein L<sup>1</sup> is a linking group, wherein R<sup>3</sup> is selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen or --CN, wherein R<sup>4</sup> is selected from hydrogen or an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, or wherein at least two groups selected from R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> together represent the necessary atoms to form a cyclic structure (paragraph 196, specifically those listed on line 4)."

Regarding claim 11, Kunita et al. further teach "wherein the --S-(L)<sub>k</sub>-Q comprises the following



formula wherein n is 0, 1, 2, 3 or 4, wherein X is 0, S or NR<sup>5</sup>, wherein each R<sup>1</sup> is independently selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen, --SO<sub>2</sub>--NH--R<sup>2</sup>, --NH--SO<sub>2</sub>--R<sup>6</sup>, --CO--NR<sup>2</sup>--R<sup>3</sup>, --NR<sup>2</sup>--CO--R<sup>6</sup>, --NR<sup>2</sup>--CO--NR<sup>3</sup>--R<sup>4</sup>, --NR<sup>2</sup>--CS--NR<sup>3</sup>--R<sup>4</sup>, --NR<sup>2</sup>--CO--O--R<sup>3</sup>, --O--CO--NR<sup>2</sup>--R<sup>3</sup>, --O--CO--R<sup>6</sup>, --CO--O--R<sup>2</sup>, --CO--R<sup>2</sup>, --SO<sub>3</sub>--R<sup>2</sup>, --O--SO<sub>2</sub>--R<sup>6</sup>, --SO<sub>2</sub>--R<sup>2</sup>, --SO--R<sup>6</sup>, --P(=o)(--O--R<sup>2</sup>)(--O--R<sup>3</sup>), --O--P(=O)(--O--R<sup>2</sup>)(--O--R<sup>3</sup>), --NR<sup>2</sup>--R<sup>3</sup>, --O--R<sup>2</sup>, --S--R<sup>2</sup>, --CN, --NO<sub>2</sub> or -M--R<sup>2</sup>, wherein M represents a divalent linking group containing 1 to 8 carbon atoms, wherein R<sup>2</sup> to R<sup>5</sup> are independently selected from hydrogen or an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, wherein R<sup>6</sup> is an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, or wherein at least two groups selected from each R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> and R<sup>6</sup> represent the necessary atoms to form a cyclic structure (paragraph 196, specifically lines 8 and 9)."

Regarding claim 12, Kunita et al. further teach "wherein the --S-(L)<sub>k</sub>-Q comprises the following formula





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wherein n is 0, 1, 2 or 3, wherein each R<sup>1</sup> is independently selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen, --SO<sub>2</sub>--NR--R<sup>2</sup>, --NR--SO<sub>2</sub>--R<sup>5</sup>, --CO--NR<sup>2</sup>--R<sup>3</sup>, --NR<sup>2</sup>--CO--R<sup>5</sup>, --NR<sup>2</sup>--CO--NR<sup>3</sup>--R<sup>4</sup>, --NR<sup>2</sup>--CS--NR<sup>3</sup>--R<sup>4</sup>, --NR<sup>2</sup>--CO--O--R<sup>3</sup>, --O--CO--NR<sup>2</sup>--R<sup>3</sup>, --O--CO--R<sup>5</sup>, --CO--O--R<sup>2</sup>, --CO--R<sup>2</sup>, --SO<sub>3</sub>--R<sup>2</sup>, --O--SO<sub>2</sub>--R<sup>5</sup>, --SO<sub>2</sub>--R<sup>2</sup>, --SO--R<sup>5</sup>, --P(=O)(--O--R<sup>2</sup>)(--O--R<sup>3</sup>), --O--P(=O)(--O--R<sup>2</sup>)(--O--R<sup>3</sup>), --NR<sup>2</sup>--R<sup>3</sup>, --O--R<sup>2</sup>, --S--R<sup>2</sup>, --CN, --NO<sub>2</sub> or -M-R<sup>2</sup>, wherein M represents a divalent linking group containing 1 to 8 carbon atoms, wherein R<sup>2</sup> to R<sup>4</sup> are independently selected from hydrogen or an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, wherein R<sup>5</sup> is an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, or wherein at least two groups selected from each R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> together represent the necessary atoms to form a cyclic structure (paragraph 196, specifically line 7)."

Regarding claim 14, Kunita et al. further teach "wherein said polymer comprising a phenolic monomeric unit is a novolac, resol or polyvinylphenol (paragraphs 191-192)."

Regarding claim 21, Kunita et al. further teach "wherein said heterocyclic group contains at least one nitrogen atom in the ring of the heterocyclic group (paragraph 194)."

Regarding claim 22, Kunita et al. further teach "wherein said heterocyclic group has a 5- or 6-membered ring structure, and is optionally annelated with another ring system (paragraph 195)."

Regarding claim 23, Kunita et al. further teach "wherein said heterocyclic group has a 5- or 6-membered ring structure, and is optionally annelated with another ring system (paragraphs 195 and 196)."

Regarding claim 24, Kunita et al. further teach "wherein said heterocyclic group has a 5- or 6-membered ring structure, and is annelated with another ring system (paragraphs 195 and 196)."

Regarding claim 25, Kunita et al. further teach "wherein the heterocyclic group is selected from an optionally substituted tetrazole, triazole, thiadiazole, oxadiazole, imidazole, benzimidazole, thiazole, benzthiazole, oxazole, benzoxazole, pyrazole, pyrrole, pyrimidine, pyrasine, pyridasine, triazine or pyridine group (paragraph 196)."

Regarding claim 26, Kunita et al. further teach "wherein said polymer comprising a phenolic monomeric unit is a novolac, resol or polyvinylphenol (paragraphs 190-191 and paragraph 197. See also the discussion above with regards to claim 1)."

Regarding claim 15, Kunita et al. disclose "a heat-sensitive lithographic printing plate precursor (paragraph 2) comprising a support having a hydrophilic surface and an oleophilic coating provided on the hydrophilic surface (paragraph 23), said coating comprising an infrared light absorbing agent (paragraph 23) and a polymer comprising a phenolic monomeric unit (paragraphs 190-191)."

Kunita et al. fail to disclose that the polymer comprises a "phenolic monomeric unit wherein the phenyl group of the phenolic monomeric unit is substituted by" the specified group and that "wherein S is covalently bound to a carbon atom of the phenyl

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group.” However, Kunita et al. teach that the heterocyclic group is attached either to the main chain or the side chain of the main polymer by an appropriate linking chain, including S and thioethers (paragraph 197), further teaching that the main polymer chain should be selected based upon availability and economical efficiency, specifically suggesting polyvinyl polymers (last sentence of paragraph 197), and one having ordinary skill in the art would recognize that poly(vinylphenols) are widely available, economical polyvinyl polymers. One having ordinary skill in the art would also recognize that when substituting polyvinylphenols, there are only three options for the location of the substitution: on a carbon of the vinyl portion, on a carbon of the phenyl portion, or on the hydroxyl group.

Kinsho et al. teach the desire and ability to incorporate heterocyclic molecules into Novolac chains (a polyvinylphenol) in order to improve the storage stability of the polymer (abstract).

Ding et al. teach the heterocyclic substitution of polyvinylphenols via the carbon atoms of the phenyl portion (see the compound drawn in column 4 Ding et al., and component Y).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use polyvinylphenol polymers as the base of the heterocyclic polymer of Kunita et al. in order to improve the storage stability. It further would have been obvious, at the very least through routine experimentation, to substitute at a carbon of the phenyl group. Furthermore, one having ordinary skill in the art could at once envisage a scenario wherein the substitution is made on a carbon of the phenyl

group, since there are only three options for substitution, if one only considers the different types of bonding positions available. And if one were to consider the actual *number* of places available for bonding (on a basic polyvinylphenol), there are only six sites available for substitution: four carbon atoms on the phenyl group, one carbon on the vinyl group, and on the oxygen atom in the hydroxyl group. Therefore, four out of six, or 67%, of the sites available for substitution would be a carbon atom of the phenyl group.

Lastly, even if the aforementioned motivations were not sufficient, which they are not, it would have been obvious to one of ordinary skill in the art at the time of the invention to substitute at the carbon atom of the phenyl group instead of the oxygen atom of the hydroxyl group in order to maintain the amount of hydroxyl groups available. One having ordinary skill in the art would recognize that the number of hydroxyl groups in a polymer is a results-effective variable, which affects the solubility in a developer solution. Even though applicants in the reply filed on 5/02/07 submitted this information, this knowledge was available to those having skill in the art *at the time of the invention*, and therefore use of this knowledge as motivation is not improper hindsight.

Regarding claim 19, Kunita et al. further teach "wherein said coating further comprising a latent Bronsted acid and an acid-crosslinkable compound and wherein said precursor is a negative working lithographic printing plate precursor (see, for example, claim 13)."

Regarding claim 27, Kunita et al. further teach “wherein the heterocyclic group is selected from an optionally substituted tetrazole, triazole, thiadiazole, oxadiazole, imidazole, benzimidazole, thiazole, benzthiazole, oxazole, benzoxazole, pyrazole, pyrrole, pyrimidine, pyrasine, pyridasine, triazine or pyridine group (paragraph 196).”

Regarding claim 28, Kunita et al. further teach “wherein --S-(L)<sub>k</sub>-Q comprises the following formula wherein Z represents the necessary atoms to form a 5- or 6-membered heterocyclic aromatic group, and is optionally annelated with another ring system (paragraph 196, line 4).”

Regarding claim 31, Kunita et al. further teach “wherein --S-(L)<sub>k</sub>-Q comprises the following formula wherein X is O, S or NR<sup>3</sup>, wherein R is selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen or -L<sup>1</sup>-R<sup>2</sup>, where in L<sup>1</sup> is a linking group, wherein R<sup>2</sup> is selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen or --CN, wherein R<sup>3</sup> is selected from hydrogen or an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, or wherein at least two groups selected from R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> represent the necessary atoms to form a cyclic structure (paragraph 196).”

Regarding claim 32, Kunita et al. further teach “wherein --S-(L)<sub>k</sub>-Q comprises the following formula wherein X is O, S or NR<sup>4</sup>, wherein R<sup>1</sup> and R<sup>2</sup> are independently selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen or -L<sup>1</sup>--R<sup>3</sup> wherein

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$L^1$  is a linking group, wherein  $R^3$  is selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen or  $-\text{CN}$ , wherein  $R^4$  is selected from hydrogen or an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, or wherein at least two groups selected from  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  together represent the necessary atoms to form a cyclic structure (paragraph 196)."

Regarding claim 33, Kunita et al. further teach " $-\text{S}-(\text{L})_k-\text{Q}$  comprises the following formula wherein  $n$  is 0, 1, 2, 3 or 4, wherein  $X$  is O, S or  $\text{NR}^5$ , wherein each  $R^1$  is independently selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen,  $-\text{SO}_2-\text{NH}-\text{R}^2$ ,  $-\text{NH}-\text{SO}_2-\text{R}^6$ ,  $-\text{CO}-\text{NR}^2-\text{R}^3$ ,  $-\text{NR}^2-\text{CO}-\text{R}^6$ ,  $-\text{NR}^2-\text{CO}-\text{NR}^3-\text{R}^4$ ,  $-\text{NR}^2-\text{CS}-\text{NR}^3-\text{R}^4$ ,  $-\text{NR}^2-\text{CO}-\text{O}-\text{R}^3$ ,  $-\text{O}-\text{CO}-\text{NR}^2-\text{R}^3$ ,  $-\text{O}-\text{CO}-\text{R}^6$ ,  $-\text{CO}-\text{O}-\text{R}^2$ ,  $-\text{CO}-\text{R}^2$ ,  $-\text{SO}_3-\text{R}^2$ ,  $-\text{O}-\text{SO}_2-\text{R}^6$ ,  $-\text{SO}_2-\text{R}^2$ ,  $-\text{SO}-\text{R}^6$ ,  $-\text{P}(=\text{O})(-\text{O}-\text{R}^2)(-\text{O}-\text{R}^3)$ ,  $-\text{O}-\text{P}(=\text{O})(-\text{O}-\text{R}^2)(-\text{O}-\text{R}^3)$ ,  $-\text{NR}^2-\text{R}^3$ ,  $-\text{O}-\text{R}^2$ ,  $-\text{S}-\text{R}^2-\text{CN}$ ,  $-\text{NO}_2$  or  $-\text{M}-\text{R}^2$ , wherein  $\text{M}$  represents a divalent linking group containing 1 to 8 carbon atoms, wherein  $R^2$  to  $R^5$  are independently selected from hydrogen or an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, wherein  $R^6$  is an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, or wherein at least two groups selected from each  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$  and  $R^6$  represent the necessary atoms to form a cyclic structure (paragraph 196)."

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Regarding claim 34, Kunita et al. further teach "claim 28 wherein --S(L)<sub>k</sub>-Q comprises the following formula wherein n is 0, 1, 2 or 3, wherein each R<sup>1</sup> is independently selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen, --SO<sub>2</sub>--NR--R<sup>2</sup>, --NR--SO<sub>2</sub>--R<sup>5</sup>, --CO--NR<sup>2</sup>--R<sup>3</sup>, --NR<sup>2</sup>--CO--R<sup>5</sup>, --NR<sup>2</sup>--CO--NR<sup>3</sup>--R<sup>4</sup>, --NR<sup>2</sup>--CS--NR<sup>3</sup>--R<sup>4</sup>, --NR<sup>2</sup>--CO--O--R<sup>3</sup>, --O--CO--NR<sup>2</sup>--R<sup>3</sup>, --O--CO--R<sup>5</sup>, --CO--O--R<sup>2</sup>, --CO--R<sup>2</sup>, --SO<sub>3</sub>--R<sup>2</sup>, --O--SO<sub>2</sub>--R<sup>5</sup>, --SO<sub>2</sub>--R<sup>2</sup>, --SO--R<sup>5</sup>, --P(=O)(--O--R<sup>2</sup>)(--O--R<sup>3</sup>), --O--P(=O)(--O--R<sup>2</sup>)(--O--R<sup>3</sup>), --NR<sup>2</sup>--R<sup>3</sup>, --O--R<sup>2</sup>, --S--R<sup>2</sup>, --CN, --NO<sub>2</sub> or --M--R<sup>2</sup>, wherein M represents a divalent linking group containing 1 to 8 carbon atoms, wherein R<sup>2</sup> to R<sup>4</sup> are independently selected from hydrogen or an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, wherein R<sup>5</sup> is an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, or wherein at least two groups selected from each R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> together represent the necessary atoms to form a cyclic structure (paragraph 196)."

Regarding claim 35, Kunita et al. further teach "wherein --S(L)<sub>k</sub>-Q comprises the following formula wherein n is 0, 1, 2 or 3, wherein each R<sup>1</sup> is independently selected from hydrogen, an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, halogen, --SO<sub>2</sub>--NR--R<sup>2</sup>, --NR--SO<sub>2</sub>--R<sup>5</sup>, --CO--NR<sup>2</sup>--R<sup>3</sup>, --NR<sup>2</sup>--CO--R<sup>5</sup>, --NR<sup>2</sup>--CO--NR<sup>3</sup>--R<sup>4</sup>, --NR<sup>2</sup>--CS--NR<sup>3</sup>--R<sup>4</sup>, --NR<sup>2</sup>--CO--O--R<sup>3</sup>, --O--CO--NR<sup>2</sup>--R<sup>3</sup>, --O--CO--R<sup>5</sup>, --CO--O--R<sup>2</sup>, --CO--R<sup>2</sup>, --SO<sub>3</sub>--R<sup>2</sup>, --O--SO<sub>2</sub>--R<sup>5</sup>, --SO<sub>2</sub>--R<sup>2</sup>, --SO--R<sup>5</sup>, --P(=O)(--O--R<sup>2</sup>)(--O--R<sup>3</sup>), --O--P(=O)(--O--R<sup>2</sup>)(--O--R<sup>3</sup>), --NR<sup>2</sup>R<sup>3</sup>, --

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O--R<sup>3</sup>, --S--R<sup>2</sup>, --CN, --NO<sub>2</sub> or -M--R<sup>2</sup>, wherein M represents a divalent linking group containing 1 to 8 carbon atoms, wherein R<sup>2</sup> to R<sup>4</sup> are independently selected from hydrogen or an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, wherein R<sup>5</sup> is an optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, heterocyclic, aryl, heteroaryl, aralkyl or heteroaralkyl group, or wherein at least two groups selected from each R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup> and R<sup>5</sup> together represent the necessary atoms to form a cyclic structure (paragraph 196)."

Regarding claims 36 and 37, Kunita et al. further teach "wherein the heterocyclic group is selected from an optionally substituted tetrazole, triazole, thiadiazole, oxadiazole, imidazole, benzimidazole, thiazole, benzthiazole, oxazole, benzoxazole, pyrazole, pyrrole, pyrimidine, pyrasine, pyridasine, triazine or pyridine group (paragraph 196)."

3. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunita et al., Kinsho et al. and Ding et al., as applied to claim 15 above, further in view of applicants' admitted prior art (AAPA).

Regarding claim 16, Kunita et al. as modified teach "wherein said precursor is a positive working lithographic printing plate precursor (claim 16)" but fail to teach "wherein said coating further comprises a dissolution inhibitor." AAPA teaches the use of a dissolution inhibitor (page 22 of applicants' disclosure, last paragraph) in order to control the dissolution rate of the hydrophobic polymer in the developer (page 22, 2<sup>nd</sup> full paragraph). It would have been obvious to one of ordinary skill in the art at the time



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of the invention to use dissolution inhibitors in the printing plate of Kunita et al. and Kinsho et al. in order to control the dissolution rate of the hydrophobic polymer in the developer.

Regarding claim 17, AAPA further teaches "wherein said dissolution inhibitor is selected from the group consisting of an organic compound which comprises at least one aromatic group and a hydrogen bonding site, a polymer or surfactant comprising siloxane or perfluoroalkyl units and mixtures thereof (see the entire page 22 of applicants' disclosure)."

4. Claims 7, 8, 13, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunita et al., Kinsho et al. and Ding et al., as applied to claims 1 and 15 above, further in view of Umeda et al. (JP 05-127402 A).

Regarding claims 7, 8, 13, 29 and 30, Kunita et al. as modified fail to disclose the specific structures claimed, but Kunita et al. teach the general concept of adding optionally annelated 5-member aromatic heterocyclic rings containing nitrogen (paragraphs 195-196). Umeda et al. discloses the specific structures claimed (see compound II-105) used as anti-oxidants in a photosensitive layer (abstract), and uses them along with the other types claimed by applicants. One having ordinary skill in the art would therefore recognize that the specific chemicals claimed in claims 7, 8, 13, 29 and 30 are art-recognized equivalents and would have been motivated to substitute any one for those disclosed by Kunita et al.

Regarding claims 7, 8, 13, 29 and 30, see the compound II-105 of Umeda et al.  
This compound meets the general structure of all the claims.

### ***Response to Arguments***

5. Applicants' arguments with respect to all the claims have been considered but are moot in view of the new ground(s) of rejection.
6. In response to applicants' argument that Kinsho et al. is nonanalogous art, it has been held that a prior art reference must either be in the field of applicants' endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicants were concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Kinsho et al. deal with substitution of main chain polymers with heterocyclic groups, which is directly pertinent to applicants' endeavor.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua D. Zimmerman whose telephone number is 571-272-2749. The examiner can normally be reached on M-R 8:30A - 6:00P, Alternate Fridays 8:30A-5:00P.

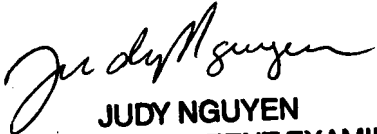
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Joshua D Zimmerman  
Examiner  
Art Unit 2854

jdz

  
**JUDY NGUYEN**  
**SUPERVISORY PATENT EXAMINER**